

# SFP 1000BASE-TX, SGMII, RX-LOS

SFP, 1G/100M/10M Ethernet, SERDES/SGMII, Auto-neg, Rx\_LOS pin, 100m, RJ45

## TSF088-ELEC-SO

The TSF088-ELEC-SO is a transceiver with a high-performance integrated duplex data link for bidirectional communication over copper cable. It is specifically designed for high speed communication links that require 1Gbps Ethernet (GbE) over LAN cable.

TSF088-ELEC-SO supports 10/100/1000BASE-T Operation in Host Systems with SGMII interface.

SGMII is a serial connection bus for Ethernet MACs and PHYs defined by Cisco Systems. SGMII runs its physical layer at 1.25Gb/s, 8B10B encoded at all times, regardless of the negotiated data rate. If the rate is 100Mbps it will repeat the same symbol ten times or one hundred times for 10Mbps. TSF088-ELEC-SO also uses the Rx\_LOS pin for link indication.

This transceiver provides a 2-wire serial interface as defined by the SFF-8472 specification. The transceiver module is compliant to RoHS-6/6.

## TECHNICAL DATA

Parameter	Value
Technology	Grey SFP (copper)
Transmission media	Electrical (1x RJ45)
Typical reach	100m <sup>1)</sup>
Interface standards	1000BASE-T IEEE 802.3 100BASE-T IEEE 802.3 10BASE-T IEEE 802.3
Protocol support	1Gbps Ethernet (GbE) 100Mbps Ethernet (FE) 10Mbps Ethernet
Operating temperature	0°C to +70°C
Power consumption	< 1.05W
Storage temperature	-40°C to +85°C

<sup>1)</sup> Using CAT5 UTP cable or better

<sup>2)</sup> Master mode means the module uses its local clock to transmit to other side.

### Safety/regulatory compliance:

TUV/UL/FDA (contact Smartoptics for latest certification information)

RoHS compliance

Parameter	Value
Sync on line side	Preferred master <sup>2)</sup>
Auto- negotiation	Yes, SGMII auto-neg
Rx LOS	Yes
MSA compliance	SFP MSA SFF-8472



10/100/1000 BASE-T operation requires an SGMII interface with no clocks in the host system, and the module will operate as 1000BASE-T when the host system uses SERDES interface.

Subject to change without notice.

For more information visit [smartoptics.com](http://smartoptics.com).

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## ORDERING INFORMATION

Ordering number	Description
TSF088-ELEC-SO	SFP, 1G/100M/10M Ethernet, SERDES/SGMII Interface, Auto-neg, Rx_LOS pin, 100m, RJ45

## GENERAL DEFINITIONS

Parameter	Description
Technology	Grey; Transceiver type for non-WDM applications. Electrical or optical. CWDM; Transceiver type for CWDM applications using G.694.2 channel grid. DWDM; Transceiver type for DWDM applications using G.694.1 channel grid. BiDi; Transceiver pair using two different wavelength channels operating on a single-fiber. DAC: Direct Attach Cable. Electrical cable with attached connectors. AOC: Active Optical Cable. Optical cable with attached connectors.
Transmission Media	Type of fiber, e.g. Multimode (MM) or Singlemode (SM). Number of and connector type within brackets (e.g. 2x LC, 1x MPO).
Typical reach	Nominal distance performance based on typical fiber dispersion, fiber loss and power budget properties, i.e. w/o dispersion compensation and optical amplification. Actual distance is dependent on actual optical path loss and dispersion properties.
Bit rate range	Supported bit rate range in Gigabit or Megabit per second (Gbps or Mbps).
Protocols	Protocols within supported bit rate range.
Nominal wavelength	Typical wavelength(s) from transmitter.
Interface standards	Referenced interface standards or MSA's, e.g. IEEE 802.3 standard for 10GbE services or 100G 4WDM-10 etc.
Power budget	Min and max power budget between Transmitter and Receiver w/o optical path penalties.
Dispersion tolerance/penalty	Maximum amount of tolerated dispersion and required reduction of power budget to maintain stipulated Bit Error Rate (BER) and at a given bit rate.
Temperature range	Max operating case temperature range. Standard temperature range (C-temp): 0°C to +70°C (32°F to +158°F) Extended temperature range (E-temp): typically -20°C to +75°C (-4°F to +167°F) Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F)
Power consumption	Worst case power consumption. Will vary over temperature.
Transmitter Output power	Average output power. Provided in min and max values.
Receiver minimum input power	Minimum average input power at specified BER, normally $1E^{-12}$ . Note that some protocols require FEC to achieve sufficient BER.
Receiver max input power	Maximum average input power giving a BER, normally $1E^{-12}$ .
DDM	Digital Diagnostic Monitoring functionality as defined in e.g. SFF-8472 MSA.

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